

## IMPACT AND ASSESSMENT OF JOB STRESS AMONG DOCTORS DURING COVID-19 VALIDATED BY STATISTICAL METHODS: A COMPARATIVE ANALYSIS ON HOSPITAL LOCALITY AND GENDER CLASSIFICATION

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### ABSTRACT

**Background:** Stress or Anxiety is a prime factor of any civilization, and the capability of doctors to comprehend with their own pressure largely impacts their capabilities which remain ever so crucial. The study is based on the survey conducted among a group of doctors of JNMC medical college AMU Aligarh and KGMC medical college Lucknow during the coronavirus pandemic. In this paper, a hypothesis has been applied employing the software SPSS so as to examine the employee performance as a function of occupational stress based on doctors.

### Methods

The research is approached from doctors' perspectives and examines the occupational stress faced by them in their everyday work-related life. The reliability and validity of the tool were established by employing a couple of techniques called factor analysis and Cronbach's alpha. The Cronbach's alpha of several matters in respective groups of the study device was computed leading to data reduction where 80 statements were reduced to 42. EFA was conducted by using SPSS version 20.0. KMO AND Bartlett's test of Sphericity is selected from Descriptive.

### Results

The ANOVA test for the influence of all the above stated six factors with respect to different age brackets came out to be in the range of 0.011 – 0.884 which is more than that of 0.05. This confirmed that all the factors had no variation with the different age groups of the users. It meant that from all the different users the responses were not conflicting. In all the above cases the KMO value ranges from 0.500 – 0.636.

### Conclusion

It is evident from the results that both the groups didn't exhibit significant variances with respect to all six variables. The significant value varied from 0.087 - 0.898. this study contributes and highlights the issue of occupational stress among doctors which if not reduced may result in severe consequences.

**KEYWORDS:** Stress management, ANOVA, Cronbach's alpha, Doctors, Hospitals, SPSS

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### INTRODUCTION

The current era of COVID -19 has tremendously impacted the whole globe, due to which hospitals have resulted in an extreme work environment eventually giving rise to a number of stress related problems among hospital employees. Stress is an amalgamation of various factors which comprises of multiple incidences or events which may occur in an individual's life. It also takes into consideration the reciprocation and consequences of the incidents faced at workplace or at the personnel level. This unwanted stress is a part of everyone's day to day life.

Often stress is emphasized as the state of tension which arises when an individual is incapable of finishing work which further recuperates into frustration, insecurity, pressure at various levels and health deterioration (Alison & Allen, 2017). To counter this unwanted stress condition, several practices have been implemented in order to furnish a viable and feasible solution for these anxiety related complications (Gregov & Sliskovic, 2011, Knesebeck et al., 2010).

In some individuals, stress is a driving and an essential factor to drive an individual to fulfil the work assigned to them, thereby enabling a positive vibe. Henceforth, stress if properly channelled may result in boosting up the performance of an individual and if inadequately endured may result in severe consequences for the individual and the organisation. (Rathod, 2014; Rana, 2014). In earlier theories stress have been defined as an evolving progression comprising of various chances and difficulties arising in an individual's life, thereby constantly changing the thought process of the person (Sims, 1997, Shah et al., 2011). In addition, stress was also explained as an emotion that causes distress and apprehension when a certain transition has occurred with the individual (Vijayashree and Mund, 2011; Srivastava & Singh, 2005). Often stress is classified as surplus pressure accumulating on an individual's mind, further recuperating into psychological imbalance. This imbalance is created due to mental, physical and emotional pressures presented at work or at home. Past theories have predicted this stress to be the main reason for hampering the satisfaction received by their respective workload (Srinivasan & Anantharaman, 1988).

The outcomes of job-based stress development can be classified through three major types as specified: physiological, emotional and behavioural (Kapur et al., 1998). Physiological effects of stress include amplified blood pressure, heightened heart rate, constant sweating, heavier breathing rate, enhanced muscular pain and abnormal gastrointestinal disorders (Vanagas & Axelsson, 2014; Vazquez, 2001). Emotional effects of stress comprise anger, anxiety, depression, low self-esteem, poor intellectual functioning (including an inability to concentrate and make decisions), nervousness, irritability, resentment of supervision and job dissatisfaction (Wu et al., 2010; Abbas et al., 2012). Behavioural effects comprise of poor performance, absenteeism, high accident rates, high turnover rates, high alcohol and drug abuse rates, impulsive behaviour and difficulties in communication (Abele & Nitzsche, 2002; Abrol, 1990).

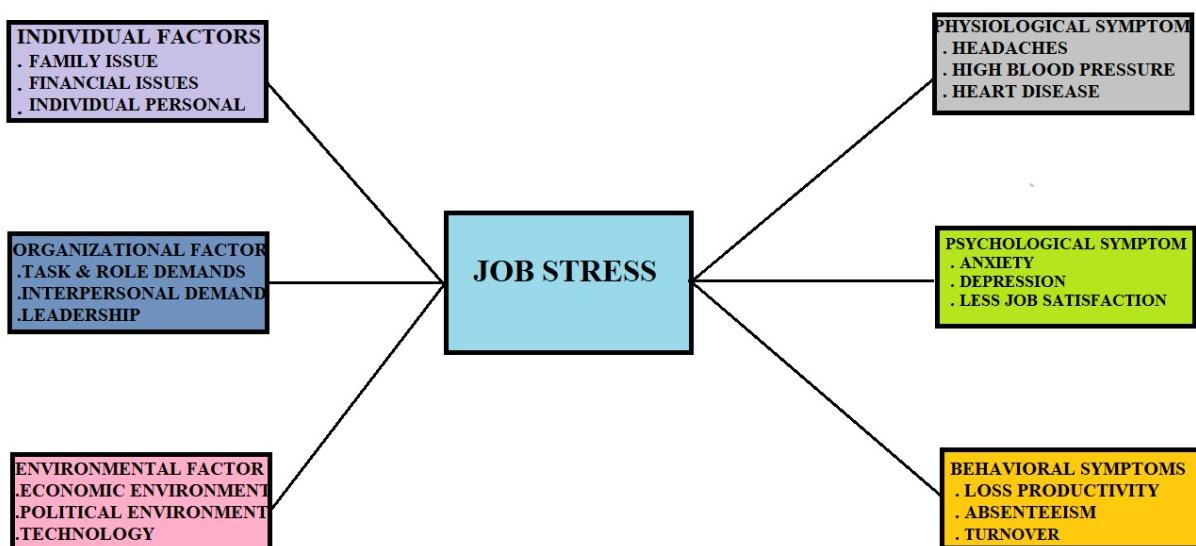
The previous literature specified above have established the job/work stress to be a mental and physical condition, which considerably affects the working parameters of the person such as yield, effectiveness, personal wellbeing and worth of work (Ahmady et al., 2007; Botseas, 2001; Verbrugge, 1986). The majority of people who have experienced unwanted stress in an organisation are reported to have a low quality of work and job dissatisfaction. In the past, organisations have adopted various programs to lower the stress condition among workers by improving working conditions and employing various destressing programs for their employees based on the workload assigned to them (Dasgupta & Kumar, 2009; Deary et al., 1996; Iqbal et al., 2012). But those organisations not having a flexible work culture have displayed lower yield and employees looking out for better opportunities in other organisations. The influence of stress from overburden, long hours at work and work intensification were established to present an adverse and devastating effect on organizations. In medical field, job satisfaction is the primary reason why most people opt for this kind of job. The feeling of helping out people and their added responsibility drives them to work harder even in a high pressurized environment. In the event of development of surplus psychological stress and inadequate feeling of satisfaction, leads to unforeseen circumstances for the patients (Irfana, 2012). Coping with job stress has so far turned out to be quite difficult for government doctors who work multiple shifts as the number of patients is severely high in developing and underdeveloped countries. These doctors undergo several encounters and difficulties pertaining to extreme work pressure, night shifts and excessive overloading of

incoming patients which is often perceived to be a major hurdle so as to balance their personal life with professional life (Fielden & Peckar, 1999). In the health-related sector, doctors have been reported to have zenith work pressure and stress as compared to other health fields professional.

The present study focuses on understanding the relationship between the independent personal demographic parameters of age, gender and marital status, as well as job/organizational factors including organizational citizenship, social responsibility, job engagement, length of service and work climate, and their effects on the various dimensions of organizational role stress. Doctors competence is under continual evaluation by both clients/patients and colleagues. Their mistakes are highly visible with potentially devastating results for patients as well as the doctors themselves. It was noted that there appeared to be a changing trend in the rise of "inappropriate patient demands" coupled with "increasing expectations of what doctors could provide" as a cause of stress, rather than simply an increase in numbers of patient demands. Moreover, stress developed of psychological nature has a higher percussion on the within the area, since doctors may commit mistakes and human errors eventually resulting into dire consequences.

The Problem under study in this research can be stated as "What is the impact of age, gender, marital status, dual-doctor marriages as well as organizational citizenship, social responsibility, job engagement, length of service and work climate on organizational role stress among medical doctors working in government hospitals during the COVID -19 pandemic". Studies have associated stress with work overload, keeping up to date, being responsible for the quality of work of other staff, dealing with resource inadequacy, and having to deal with patients' suffering and a lack of autonomy. Furthermore, the paper includes a hypothesis which has been applied by employing the software SPSS in order to examine the employee performance as a function of occupational stress based on government doctors and private doctors. The paper also focuses on the occupational stress faced by government doctors and eventually dealing with the pressure of work successfully. Also, the stress and its factors are explained in figure 1 provided below.

This research will help in obtaining a viable solution for those problems faced by doctors in different sectors during the COVID -19 pandemic and can act as a catalyst to set up a solution, so that they can perform more efficiently.



**Figure 1: Flow Chart for Job Stress**

## 2. METHOD

### 2.1 Participants

The prime objective of the research was to understand and interpret the relationship between organizational stress and Medical workers precisely doctors in the present scenario of coronavirus pandemic (Gordon, 2004). The study was mainly conducted in two government hospitals located in Uttar Pradesh, India namely Jawaharlal Nehru Medical College Hospital, Aligarh Muslim University and King George Medical College (KGMC), Lucknow in the various departments during the months of November-December, 2020. The participants mainly comprise of MBBS doctors from these above colleges. The survey was based on 104 participants from both the college 60 from AMU and 44 from KGMC. The questionnaire was provided to each doctor with answers filled up on a personal level. The response rate from all the doctors was 94 %.

KGMC is a medical school located in Lucknow, Uttar Pradesh, India. The University has a capacity for 1250 undergraduate's students (including 280 dental students) and 450 postgraduate students.

Jawaharlal Nehru Medical College is the constituent medical college of Aligarh Muslim University located in Aligarh, Uttar Pradesh, India.

**Table 1: Population Demographics**

Population Descriptor	Sub Classification	Frequency
Gender	Male	56
	Female	48
Respondent location	Metro city	85
	Urban city	19
Age (in years)	21-30	42
	31-40	54
	40	8
Degree	MBBS	62
	MD	42
Marital Status	Unmarried	43
	Married	54
	Divorced	5
	Separated	2
Overtime (Optional or compulsory in hours)	< 1	23
	1-3	32
	4-6	49
Work characteristics	Feeling overloaded	67
	Overtime (hrs per week)	4
	On-call responsibility	82
	Job control	69
	Teamwork	41
	Supervisory fairness	64
Health indicators	Self-rated health	61
	Diagnosed illness	35
	Minor psychiatric morbidity	9

### 2.2 Research Design

In order to proceed in any data-based research, it is essential to prepare a research design which is responsible for furnishing a conceptual structure which explains the procedure of research experimentation. It is considered as the framework or plan for a study as well as helps data collection and analysis of data. The study is based on a descriptive

research design. It mainly is based on understanding the organizational stress and its management in the present scenario and can be explained in the following points:

- The study aims to investigate occupational stress encountered by government doctors.
- To investigate the impact of hospital environment, physical stress, monetary stress
- , psychological stress, stress at work, interpersonal relationship on the performance of employees.
- To comparatively study the stress management phenomenon of doctors in government hospitals.

#### **2.2.1 Research instrument - Questionnaire**

The primary basis for a descriptive research design was studied and further these guidelines were applied to furnish and create a structured questionnaire. The questionnaire clearly highlighted that this survey was primarily for educational and academic purposes. The questionnaire precisely used a set of filtered questions, which ensured that all aspects of stress development in doctors be covered in it. The questionnaire was administered to the selected 400 respondents. Indepth study was conducted and several articles online and offline were considered before making the questionnaire. The questionnaire was established taking into consideration the various aspects of prior literature surveys were job stress played a vital role among participants performance, thereby simultaneously fulfilling the research goals in this paper. As for the structure of the questionnaire, it has been divided into seven parts:

- Questions about Hospital environment.
- An array of questions about interpersonal relationship.
- Questions about stress at work.
- An array of questions monetary benefit stress.
- Questions about loyalty stress.
- An array of questions about psychological stress.
- Lastly, a collection of socio-demographic parameter-based queries concerning the gender and age were considered.

Approximately 139 responses were received, among which 104 were found suitable for analysis. A substantial number of respondents hailed from metro cities of India (Delhi, Mumbai, Chennai, and Kolkata). While some questionnaires were partially filled and thereby rejected and excluded from the study.

#### **2.3 Techniques of Data Collection and Sampling**

In order to attain the necessary data required to formulate a hypothesis, a survey questionnaire has been developed which comprises of both close and one open ended question. The participants in the proposed study were doctors (men and women) working in the two medical Colleges. 150 questionnaires were distributed to these doctors between November 2020 to December 2020. During the distribution of the questionnaires, the researcher explained the purpose of the study to the concerned individual and assured about the confidentiality of their responses. There was generally a good response and

interest in filling up the questionnaires. Some respondents added their insight and experiences in the area of stress and hence they were encouraged to talk and share their views. A majority of doctors responded quickly to the questionnaire; however, some took over a week while others took about 2-3 days to submit the completed questionnaires. The responses from KGMC were collected with the help of an online Google questionnaire- the link of which was sent to the doctors of KGMC and the responses were coming on the provided mail id. Meeting the doctors and connecting through a few key individuals who were co-operative helped in completing the data collection in JNMCH and also my relatives helped me in getting filled my questionnaire from doctors of KGMC. Moreover, making a number of calls and meeting doctors individually helped in completing the data collection.

### **2.3.1 Sample Size**

The sample size carefully chosen for the hypothesis development comprises of 104 respondents. The participants are nominated through a simple random sampling technique.

### **2.3.2 Sampling Techniques**

Information regarding several characteristics which aggravate job stress, directly and indirectly, were collected through a specific questionnaire intended for the respondents. These enquiries are essential to ensure and validate the reliability of the acquired data. The questions were simple to comprehend so that info gathered from various respondents can be grouped straightforwardly. Furthermore, a confirmation should be stated to perceive that parties should be unbiased or prejudiced.

### **2.3.3 Software Applied**

Mean standard deviation, factor analysis significant values, t-value, and ANOVA have been calculated with the help of the SPSS software.

## **2.4 Hypotheses**

### **Hypotheses for Independent sample T-Test with respect to Hospitals:**

**H01:** No significant alteration among doctors of JNMCH and KGMC while considering hospital environment.

**H02:** No significant alteration among doctors of JNMCH and KGMC while considering interpersonal relationship.

**H03:** No significant alteration among doctors of JNMCH and KGMC while considering stress at work.

**H04:** No significant alteration among doctors of JNMCH and KGMC while considering monetary benefit stress.

**H05:** No significant alteration among doctors of JNMCH and KGMC while considering physical stress.

**H06:** No significant alteration among doctors of JNMCH and KGMC while considering psychological stress.

### **2.7.1 Hypotheses for Independent sample T-Test with respect to gender:**

**H07:** No significant alteration among doctors of JNMCH and KGMC while considering gender about hospital environment.

**H08:** No significant alteration among doctors of JNMCH and KGMC while considering gender about interpersonal relationship.

**H09:** No significant alteration among doctors of JNMCH and KGMC while considering gender about stress at work.

**H10:** No significant alteration among doctors of JNMCH and KGMC while considering gender about monetary benefit stress.

**H11:** No significant alteration among doctors of JNMCH and KGMC while considering gender about physical stress.

**H12:** No significant alteration among doctors of JNMCH and KGMC while considering gender about psychological stress.

#### **2.7.2 Hypotheses for One way ANOVA-Test:**

**H13:** No significant alteration among doctors of JNMCH and KGMC while considering age bracket about hospital environment.

**H14:** No significant alteration among doctors of JNMCH and KGMC while considering age bracket about interpersonal relationship.

**H15:** No significant alteration among doctors of JNMCH and KGMC while considering age bracket about stress at work.

**H16:** No significant alteration among doctors of JNMCH and KGMC while considering age bracket about monetary benefit stress.

**H17:** No significant alteration among doctors of JNMCH and KGMC while considering age bracket about physical stress.

**H18:** No significant alteration among doctors of JNMCH and KGMC while considering age bracket about psychological stress.

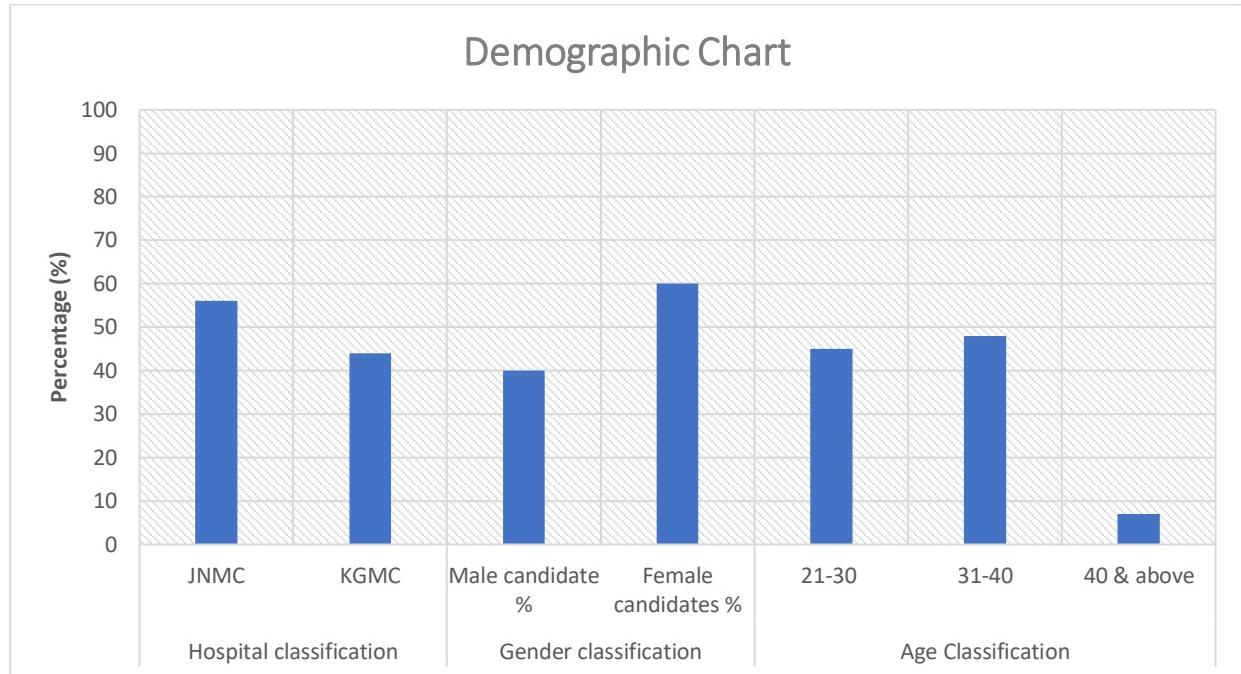
### **3. RESULT AND DISCUSSION**

#### **3.1 Response Rate**

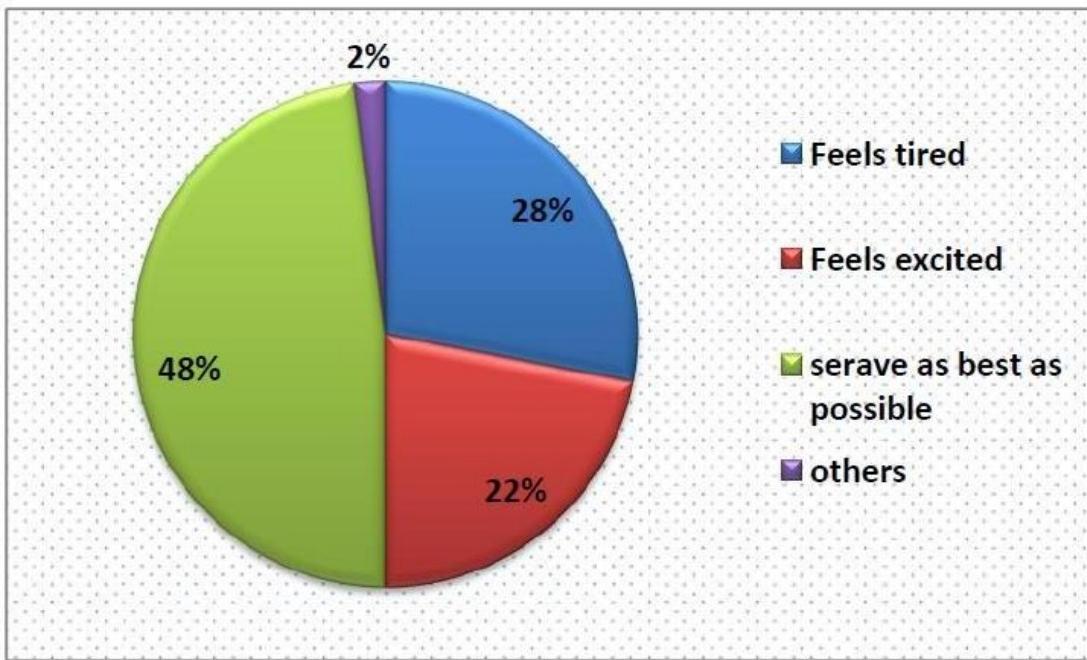
One thirty-nine questionnaires were distributed among government hospitals, and 104 were acknowledged. Hence 75% of responses were generated from the respondents.

#### **3.2 Demographics Frequency Table**

Table 1 distinguishes various physical attributes related to the respondents and a percentage comparative analysis is provided in graph figure 2. Basic information gathered through questionnaires is collected and incorporated into the statistic domain of the investigation. The principal share of the questionnaire comprises of doctors aged between 31 to 40 years and predominantly gender male. Mainstream (60%) of the doctors hold only MBBS degrees while the rest of them are MD also.



**Figure 2: Bar Chart Demographics for Respondents**



**Figure 3: Pie Chart Based on Reactions during Peak Number of Cases due to COVID -19 Pandemic**

### 3.3 Reliability Test

The reliability and validity of the instrument was estimated by the application of certain statistical tools such as factor-based analysis and Cronbach's alpha value. Often Cronbach's alpha is explained as an essential tool in estimating the internal consistency among various groups lined up in the questionnaire. It can also be interpreted as an estimation of the scale of reliability. Reliability in earlier researches is explained as the relationship between groups which provides a ratio of scores variance upon the practical variance obtained during study analysis (Hair et al., 1998). An increased alpha value

is attained when scale items are extremely interrelated evident from prior literature (Bowling, 1997). Previous studies in the related field of social sciences have provided that this value lies around 0.70 and thereby is deemed to be quite accurate and reliable. The estimated value of Cronbach's alpha for this analysis is found to be 0.779 which lies in the required range. The numerical value was generated by applying equation 1 as provided below:

$$\alpha = \frac{N\bar{C}}{\bar{v}+(N-1)\bar{C}} \dots \text{Equation 1}$$

Here N is showing the number of items,  $\bar{C}$  is interpreted as the average inter-item covariance among the items and  $\bar{v}$  furnishes the average variance. Estimation of Cronbach's alpha among different items applied in all categories of the study instrument, which substantially reduced the number of statements from 80 to 65 and finally 42. The scale comprised of approximately five perceptions which were evaluated against the alpha value for all major dimensions and are furnished in table 2 given below:

**Table 2: Reliability Test Indicator**

S.No	Factors	Mean	Standard Deviation	Cronbach's Alpha
1	Hospital Environment	0.910	0.406	0.665
2	Interpersonal Relationship	0.281	0.755	0.696
3	Stress Work	0.710	0.494	0.741
4	Stress Monetary Benefit	1.298	0.278	0.729
5	Stress Physical	4.705	0.011	0.691
6	Stress Psychological	0.123	0.884	0.774

### 3.4 Exploratory Factor Analysis (EFA)

EFA was conducted by using SPSS version 20.0. KMO AND Bartlett's test of Sphericity is selected from Descriptive. Varimax rotation was used in order to reduce cross loadings. Absolute value is selected below 0.49. Sample Adequacy was checked using Kaiser-Meyer- Olkin value (KMO). The results of Factor Analysis are shown below in table 3.

**Table 3: Exploratory Analysis Table**

Principal Components	Initial	Extraction
Breaks provided	1.000	.7477
Working hours	1.000	.669
Pollution	1.000	.556
Helpful	1.000	.767
Development	1.000	.683
Appraisal	1.000	.778
Training	1.000	.629
Career opportunities	1.000	.800
Scale pays	1.000	.713
Over time	1.000	.734
Fringe-benefit	1.000	.663
Reimbursement	1.000	.742
Post retires	1.000	.782
Health problems	1.000	.629
Nightshifts	1.000	.703
Illness	1.000	.860
Concentration	1.000	.650
Anger	1.000	.898
Tension	1.000	.846
Family life	1.000	.688

### 3.5 Independent Samples t-TEST

An independent T-test is applied to provide a comparison for the means among a group of unrelated groups on the same continuous, reliant on variable. To find the differences in the response patterns of the variable that we have employed here that is gender with different categories, The T-test was employed and inferences were drawn from t value and significant values. We have applied T-Test on our section-A likert scale questions with variable as Gender. The category wise results of the Independent sample T-test are shown below in table 4:

**Table 4: T-Test with Respect to Hospitals Classification**

S.NO	FACTORS	CATEGORY	N	MEAN	T VALUE	SIG.(2 TAILED)
1	HOSPITAL ENVIRONMENT	KGMC JNMCH	46 58	3.2337 2.5560	6.943	0.000
2	INTERPERSONAL RELATIONSHIP	KJMC JNMCH	46 58	3.6630 3.0431	4.071	0.000
3	STRESS WORK	KJMC JNMCH	46 58	3.1232 3.3793	-2.241	0.004
4	STRESS MONETARY BENEFIT	KJMC JNMCH	46 58	3.0739 2.4828	5.909	0.00
5	STRESS PHYSICAL	KGMC JNMCH	46 58	3.5435 4.1494	-4.575	0.00
6	STRESS PSCHOLOGICAL	KJMC JNMCH	46 58	3.0815 4.1681	-8.190	0.000

Statistical results obtained through independent T-test based on hospital classification predicts that both hospitals considered in the analysis exhibit significant variances ranging between 0-0.4 based on the six parameters considered. All hypotheses between H01-H06 were rejected since the level of significance was found to be lower than 0.5. this shows that doctors employed in both hospitals have significant differences while considering these six parameters.

**Table 5: T-Test with Respect to Gender Classification**

S.NO	FACTORS	CATEGORY	N	MEAN	T VALUE	SIG.(2 TAILED)
1	HOSPITAL ENVIRONMENT	MALE FEMALE	41 63	2.7313 2.9365	-1.726	0.087
2	INTERPERSONAL RELATIONSHIP	MALE FEMALE	41 63	3.1463 3.4286	1.716	0.089
3	STRESS WORK	MALE FEMALE	41 63	3.1951 3.3122	-0.988	0.325
4	STRESS MONETARY BENEFIT	MALE FEMALE	41 41	2.6829 2.7841	-0.862	0.391
5	STRESS PHYSICAL	MALE FEMALE	63 41	3.8699 3.8889	-0.128	0.898
6	STRESS PSYCHOLOGICAL	MALE FEMALE	41 63	3.8171 3.6032	1.241	0.4217

While statistical results obtained through independent T-test based on gender classification predicts that both the genders (male and female) considered in the analysis, exhibit insignificant variances ranging between 0.870-0.898 based on the six parameters considered. All hypotheses between H07-H12 were accepted since the level of significance was found to be higher than 0.5. This shows that doctors of both the genders have no significant differences while considering these six parameters.

### **3.6 One-Way ANOVA Test**

Often ANOVA is used to provide a statistical assessment among the potential alterations in a scale-based dependent parameter by a nominal-level parameter comprising of 2 or more groups.

Implementation of ANOVA technique was performed to validate the relationship of the Likert scale questions keeping in consideration the parameters such as age which is the prime factor seen for job stress development. The table given below shows the significant variation.

**Table 6: ANOVA Test for Significant Variation**

S.No	Factors	F-value	Sig.
1	Hospital Environment	0.910	0.406
2	Interpersonal Relationship	0.281	0.755
3	Stress Work	0.710	0.494
4	Stress Monetary Benefit	1.298	0.278
5	Stress Physical	4.705	0.011
6	Stress Psychological	0.123	0.884

As there were more than 2 options for age group, so the ANOVA test was done to bring out the variances (if there) because of the different users. The inferences are drawn from the F value and significant values. The table given above shows the significant variation. Results drawn from ANNOVA test while considering the age bracket for doctors accessed on the basis of six parameters was found to be insignificant since values ranged between 0.511-0.884 (since the level of significance was higher than 0.5). Hence these parameters are not connected to the age bracket, since these don't show any variation. This leads to the acceptance of the hypothesis between H13-H18.

## **CONCLUSIONS**

The primary goal of the research work was to comprehend and recognise the possible factors responsible for developing workplace stress among Doctors working tirelessly during the pandemic COVID-19. The development of various strains of coronavirus has further heightened stress among doctors. Henceforth a hypothesis was developed to understand and estimate various parameters responsible for stress development. These hypotheses were further validated by statistical methods. Conclusions drawn from the analysis implied the job stress development is a significant and driving factor in the doctor's performance and personal wellbeing. Henceforth, some conclusions drawn from the study are provided below: The conceptual schematization that laid the foundation for the study held reasonably well. The prime two factors considered in the analysis are:

- Impact of Demographic Variables on job stress on doctors during COVID-19 Pandemic.
- Impact of Organizational Variables on job stress on doctors during COVID-19 Pandemic.

Nearly a few results are in agreement with the applied postulations, while the remaining outcomes are in agreement with the hypotheses partially. Major deductions derived through the analysis are provided along with their theoretical and practical consequences.

- Outcomes achieved through factor analysis estimate the Kaiser-Meyer-Olkin (KMO) test value to lie in the range of 0.500 – 0.636, therefore suggesting all postulations to be significant (above 0.5).
- Statistical results obtained through independent T-test based on hospital classification predicts that both hospitals considered in the analysis exhibit significant variances ranging between 0-0.4 based on the six parameters considered. All hypotheses between H01-H06 were rejected since the level of significance was found to be lower than 0.5. this shows that doctors employed in both hospitals have significant differences while considering these six parameters.
- While statistical results obtained through independent T-test based on gender classification predicts that both the genders (male and female) considered in the analysis, exhibit insignificant variances ranging between 0.870-0.898 based on the six parameters considered. All hypotheses between H07-H12 were accepted since the level of significance was found to be higher than 0.5. This shows that doctors of both the genders have no significant differences while considering these six parameters.
- Results drawn from ANNOVA test while considering the age bracket for doctors accessed on the basis of six parameters was found to be insignificant since values ranged between 0.511-0.884 (since the level of significance higher than 0.5). Hence these parameters are not connected to the age bracket, since these don't show any variation. This leads to the acceptance of the hypothesis between H13-H18.

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